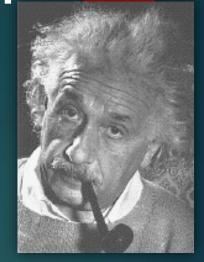
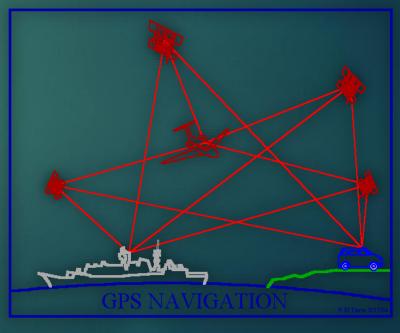
2017 Solid Waste and Recycling Workshop



Unleash the Power of your Phone & Google Earth Profor Mapping

Commonwealth Of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection
Division of Waste Management
Recycling and Local Assistance
waste.ky.gov





HEY!

Did you know that my camera has a phone?



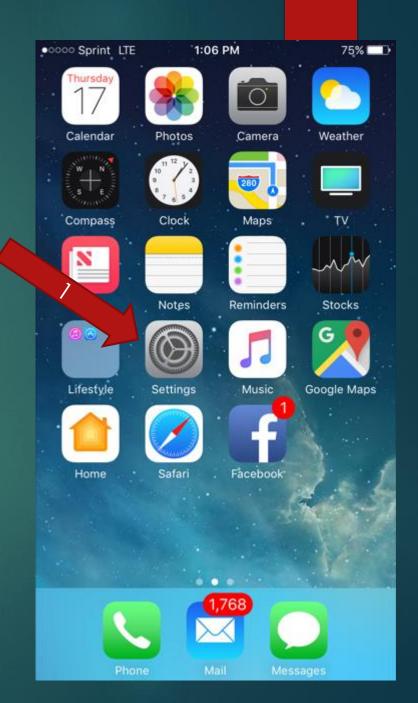
Geotagging

Geotagging is the act of including geographical information about where a photo was taken in with the digital photo file. Geotagging is extremely helpful to anyone who takes a large number of pictures and needs a way to record exactly where each photo was taken.

EXIF data

- ► EXIF is short for Exchangeable Image File, a format that is a standard for storing interchange information in digital photography image files using JPEG compression.
- Almost all new digital cameras use the EXIF annotation, storing information on the image such as shutter speed, exposure compensation, F number, what metering system was used, if a flash was used, ISO number, date and time the image was taken, white balance, auxiliary lenses that were used and resolution.
- Cameras and phones with GPS capability store locational information so you can easily see where the images were taken!

► To turn geotagging on for the Camera app, start by tapping the "Settings" icon on the iPhone's home screen to launch the Settings app.



► Tap "Privacy" and then tap "Location Services" to open the Location Services screen.



••ooo S	print LTE 1:26 PM	75% 🔳
	Settings	
	Control Center	>
C	Do Not Disturb	>
	General	>
AA	Display & Brightness	>
	Wallpaper	>
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	Siri	>
	Touch ID & Passcode	>
	Battery	>
	Privacy	>
A	iTunes & App Store	>
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► Tap "Location Services" to open the Location Services screen.



•0000 S	print LTE 9:31 AM	74% 🔳
Set	tings Privacy	
7	Location Services	On >
	Contacts	>
	Calendars	>
0 0	Reminders	>
	Photos	>
*	Bluetooth Sharing	>
•	Microphone	>
-4440	Speech Recognition	>
O	Camera	>
	Health	>
	HomeKit	>
	Media & Apple Music	>
=	Motion & Fitness	>

▶ Toggle the virtual "Location Services" switch to the On position and then scroll down and toggle the "Camera" switch to the On position as well. You'll know the switches are turned on when they turn green.

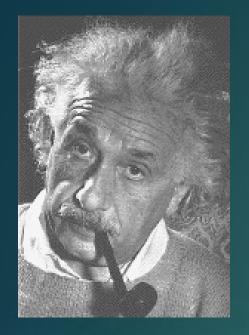


Geotagging with Android Smartphones

- Go to your Android device's home screen, then press the "Menu" button. Tap "Settings" to access the settings menu.
- 2. Drag your finger up the screen to scroll down the phone's menu until you find the "Location" option. Tap the "Location" option to continue. Note that on some Android devices this may be labeled "Location and Security."
- 3. Tap the option labeled "Use GPS Satellites" to place a green check mark next to it. This option must be turned on for the geotagging option to work.
- 4. Press the "Home" button to go back to the main screen, then tap the camera icon to launch your Android smartphone's camera.

Geotagging with Android Smartphones

- 5. Tap the "Menu" button once the camera application loads, then tap the "Settings" option. On some Android cameras, this option will simply be a small cog icon.
- 6. Scroll down to "Store Location in Pictures," or "Geo-tag Photos," depending on your OS version, and tap that option to put a green check mark next to it.
- 7. Tap "OK" when you see a message telling you that the GPS function needs to be turned on. Your photos will now be geotagged with your location as long as your phone can get your position from the GPS satellites.
- 8. Some older models of Android smartphones on smaller carriers may have the geotagging feature made unavailable from the camera's settings. If your camera doesn't have a geotagging option, the only way to geotag photos is to download from the Android Market a camera app that supports geotagging.

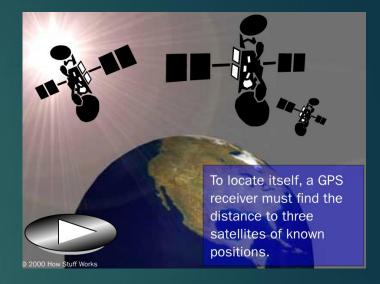


Where am I and how am I moving?

The Global Positioning System (GPS) is a network of about 30 satellites orbiting the Earth at an altitude of 20,000 km. The system was originally developed by the US government for military navigation but now anyone with a GPS device, be it a Sat Nav, mobile phone or handheld GPS unit, can receive the radio signals that the satellites broadcast.

Wherever you are on the planet, at least four GPS satellites are 'visible' at any time. Each one transmits information about its position and the current time at regular intervals. These signals, travelling at the speed of light, are intercepted by your GPS receiver, which calculates how far away each satellite is based on how long it took for the messages to arrive.

Once it has information on how far away at least three satellites are, your GPS receiver can pinpoint your location using a process called trilateration.



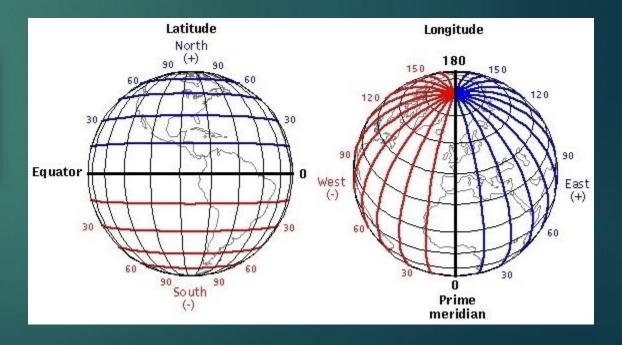
Coordinate Systems Global Systems Latitude, Longitude, Height

The most commonly used coordinate system today is the latitude, longitude, and height system.

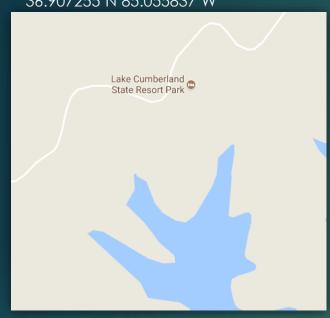
The Prime Meridian and the Equator are the reference planes used to define latitude and longitude.

WGS 84 is the default map datum for any GPS receiver. It is a system developed around the emergence of GPS technology and is **standardized** for universal use.

Geographic coordinates (Latitude, Longitude)						
Hemisphere	DMS	DMM	DDD			
Latitude: ONOS	ddd°mm'ss.ss"	ddd°mm.mmm'	ddd.ddddd°			
Longitude: OWOE	• " "		٥			



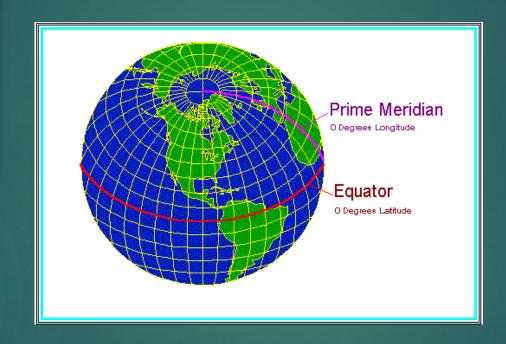
36.907255 -85.055837 36.907255 N 85.055837 W



-36.907255 -85.055837 36.907255 \$ 85.055837 W



One wrong sign or symbol & and you will find yourself in



The Royal Observatory is the site of the Greenwich meridian line 51.476866, 0.00000

36.907255 85.055837

36.907255 N 85.055837 E

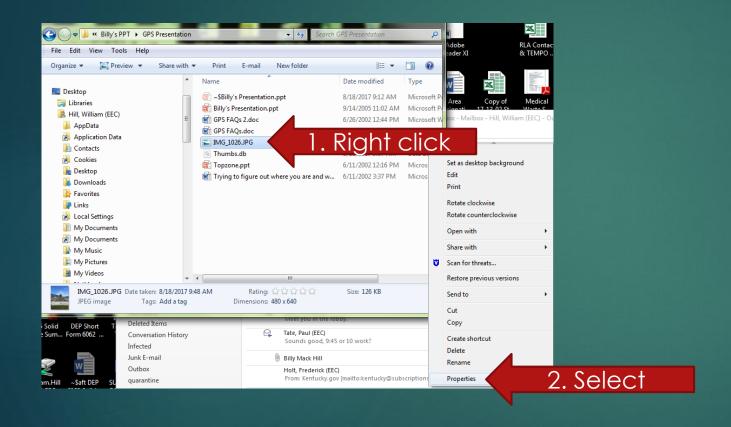


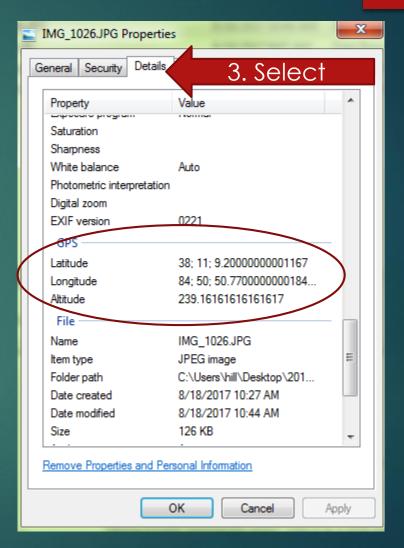
-36.907255 85.055837

36.907255 \$ 85.055837 E

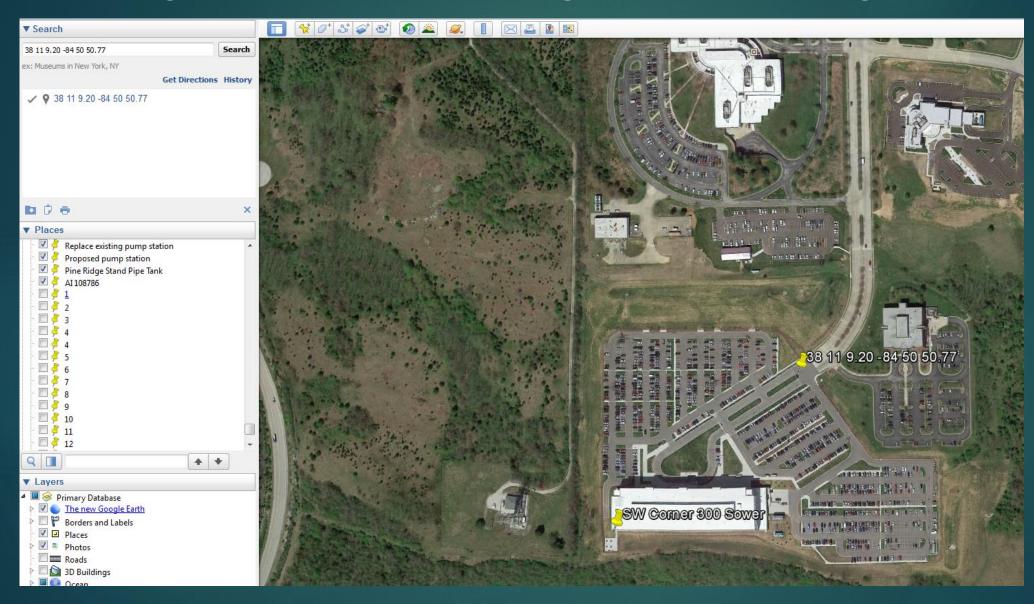


Retrieving data from photo file properties

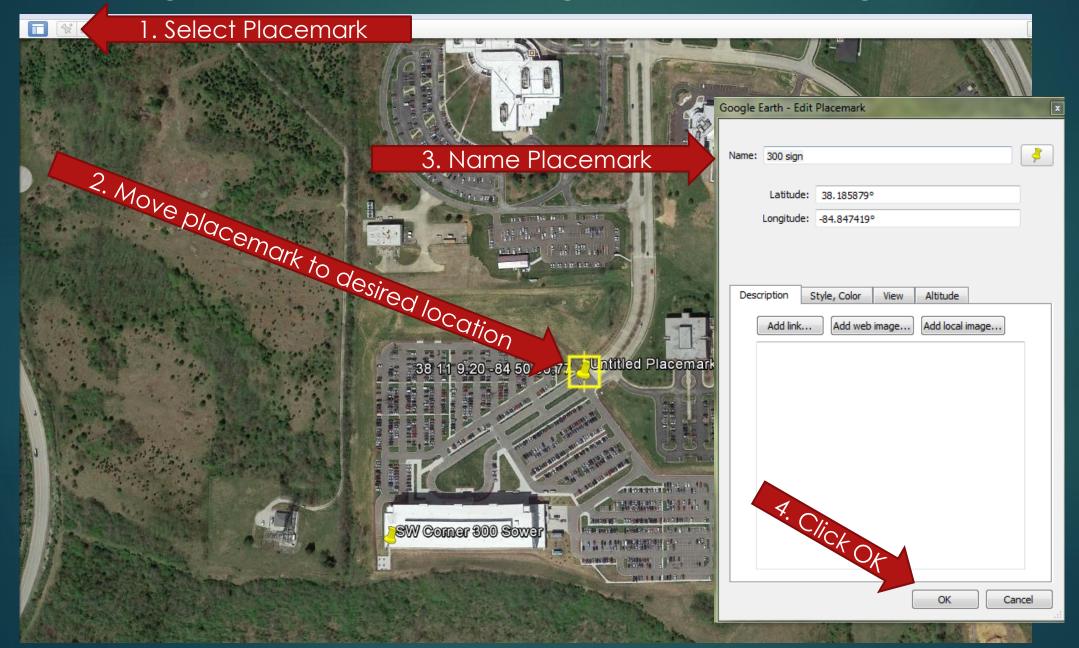




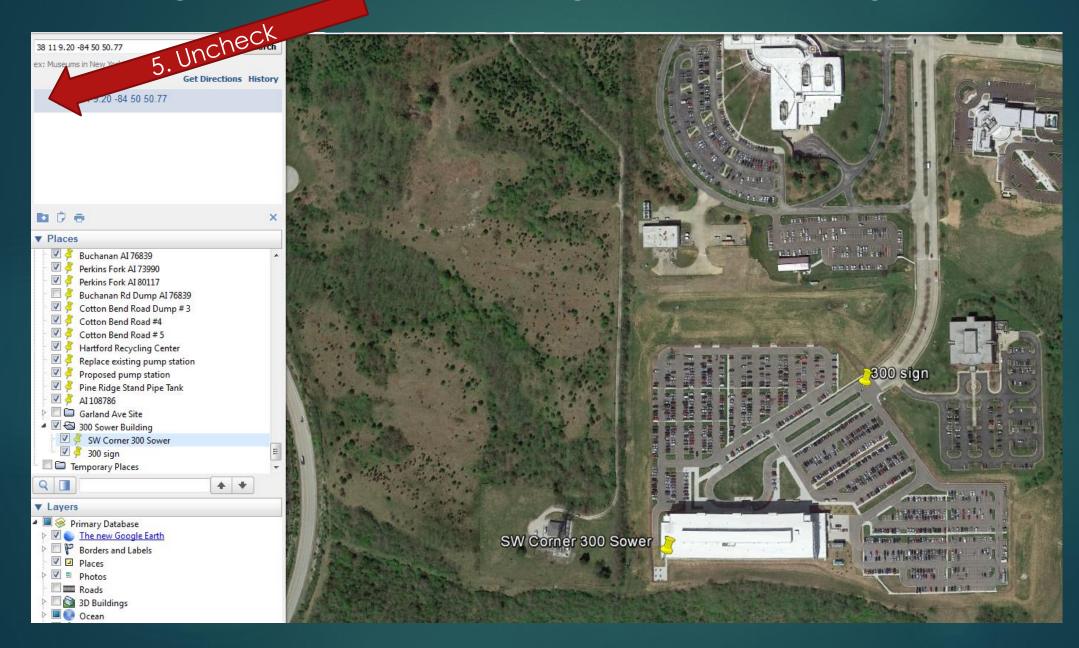
Adding a Placemark in Google Earth or Google Earth Pro



Adding a Placemark in Google Earth or Google Earth Pro



Adding a Placemark in Google Earth or Google Earth Pro



imgonline

https://www.imgonline.com.ua/eng/exif-info.php

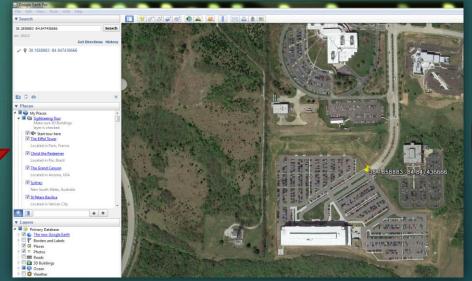


imgonline.com is an online application that lets you take a deeper look at your favorite images –

NOTE –there are many free online applications that will work with similar functionality

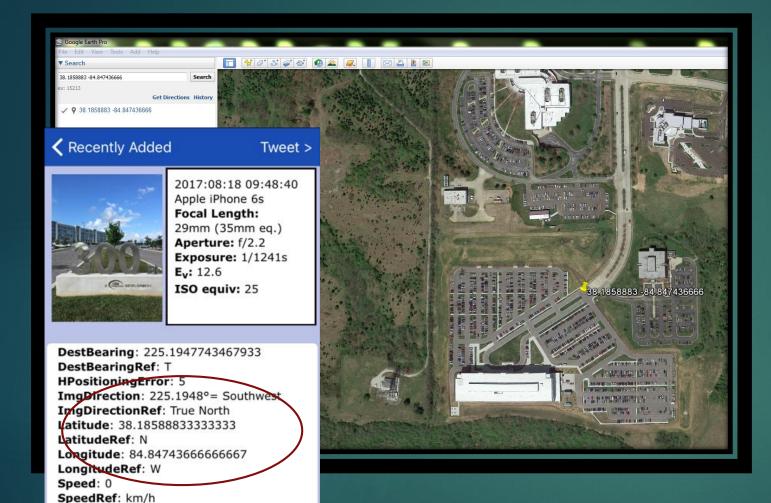


GPS Img Direction Ref	True North		
GPS Img Direction	225.1947674		
GPS Dest Bearing Ref	True North		
GPS Dest Bearing	225.1947674		
GPS Date Stamp	2017:08:18		
GPS Horizontal Positioning Error	5 m		
Padding	(Binary data 2060 bytes)		
Maker Notes			
Run Time Flags	Valid		
Run Time Value	11501185111583		
Run Time Epoch	0		
Run Time Scale	100000000		
XMP			
About	uuid:faf5bdd5-ba3d-11da-ad31-d33d75182f1b		
Creator Tool	Microsoft Windows Photo Viewer 6.1.7600.16385		
Composite	·		
Aperture	2.2		
GPS Altitude	239.1 m Above Sea Level		
GPS Bate/Time	18.08.2017, 13:48:40		
GPS Latitude	38 deg 11' 9.20" N		
PS Longitude 84 deg 50' 50.77" W			
CPS Position	38 deg 11' 9.20" N, 84 deg 50' 50.77" W		
G O I OSIGOTI	00 deg 11 0.20 11, 04 deg 00 00.11 VV		





Phone Apps to access EXIF data











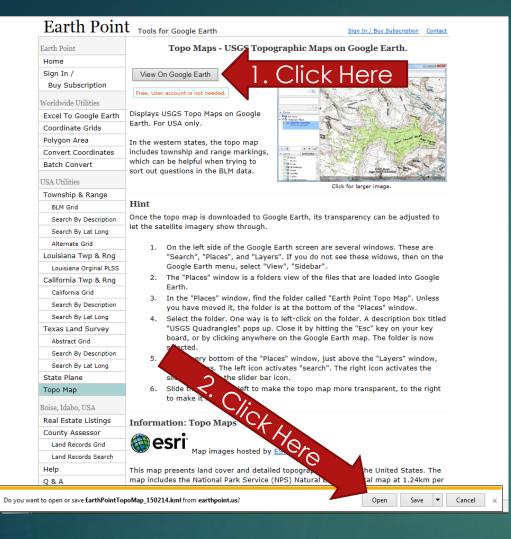
TimeStamp: 13:48:40 PixelWidth: 3024

PixelHeight: 4032

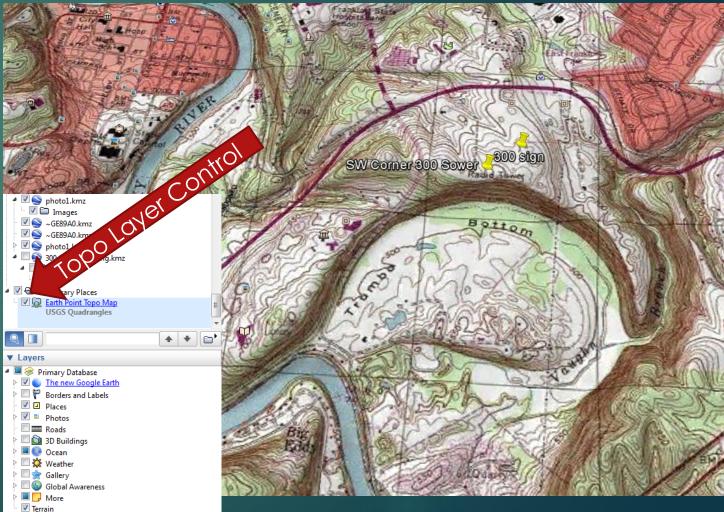




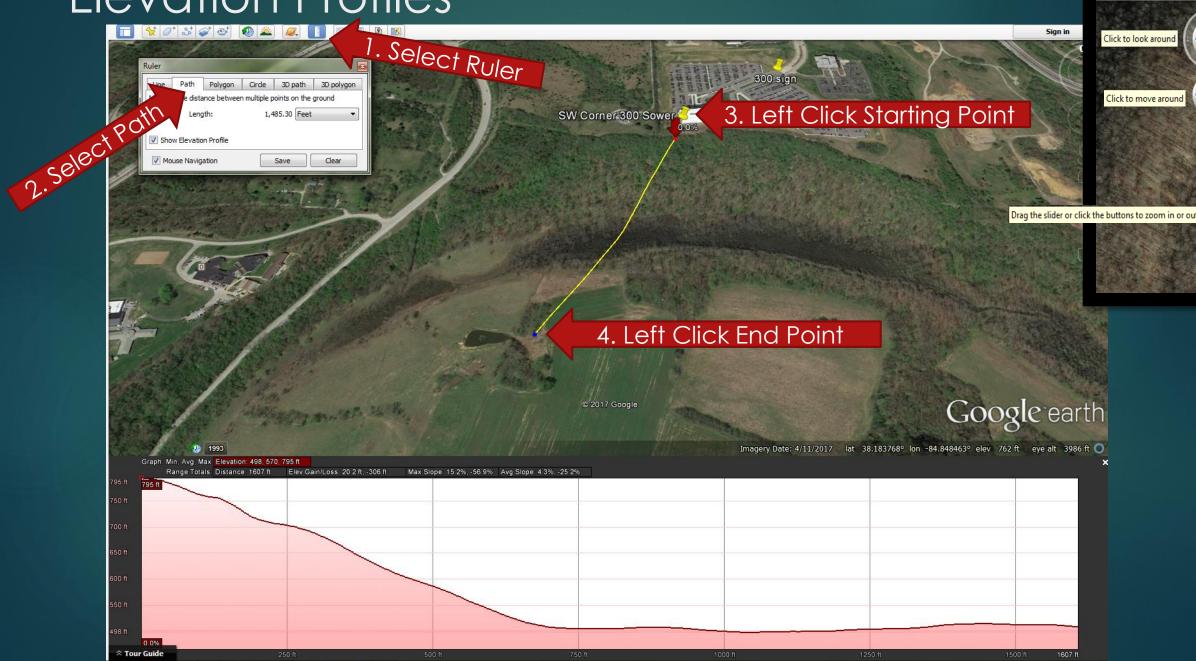




Earth Point http://www.earthpoint.us/TopoMap.aspx Tools for Google Earth



Elevation Profiles



Area & Perimeter

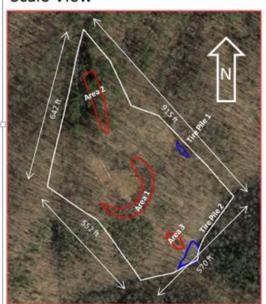


Blue Ridge Road Dump - Clinton County KY

Clinton County ranges from nearly level to very steep terrain with elevations at 540 feet to 1,780 feet above sea level. Most of the drainage in the northern part of the county flows into Lake Cumberland and the Cumberland River through Indian and Willis creeks. The Blue Ridge Dump foot print covers 8.63 acres and ranges from 960 feet above sea level along the northwest boundary of the site to 800 feet above sea level along the Little Willis creek tributary stream at Tire Pile 2.

Waste Areas	Latitude	Longitude	
Area 1	36.799973	-85.19834	
Area 2	36.80097	-85.19895	
Area 3	36.79955	-85.19776	
Tire Pile 1	36.80052	-85.19769	
Tire Pile 2	36.79943	-85.19752	

Scale View





The site consists of waste tires, appliances, auto parts, car frames, bottles, signs and miscellaneous trash dating back to the 1940s. The waste is concentrated in 5 areas labeled Areas 1, 2, 3 and Tire Piles 1 and 2. With the exception of Area 1, the material is resting above ground has been dumped at a higher elevation and tumbled down to its resting place. Since there is no one vantage point to see all the areas, a set of reference coordinates has been provided. For Areas 2, 3 and Tire Piles 1 and 2, most of the material is visible from each of the respective coordinates. The challenge is the steep slope and limited access to the waste areas. Much of the material will have to be pulled up using winches or a snatch block and pulley system. While most of the waste is located within the labeled areas, there is some scattered material (mostly tires) outside of the areas.

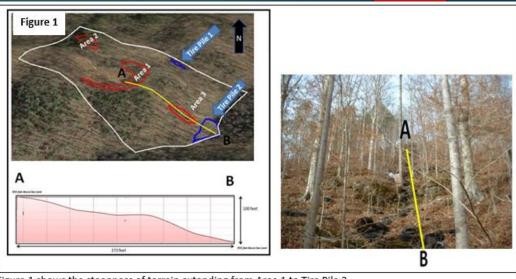
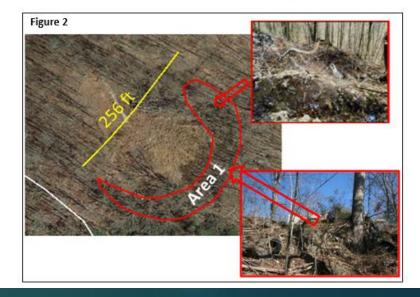


Figure 1 shows the steepness of terrain extending from Area 1 to Tire Pile 2

Area 1 represents the largest accumulation of waste at the site. Waste has been dumped at the end of the access road over the years and then pushed over the edge to make room for more. Consequently some of the waste is buried and has been pushed over the edge of a steep slope. Some of the waste was removed as part of a 2010 cleanup. The volume of bulky material mixed with soil remaining in Area 1 is difficult to estimate but certainly exceeds 1,000 tons. Segregating metals for recycling and separating bulky material from saturated soil will reduce the volume of waste for disposal considerably (Figure 2.)



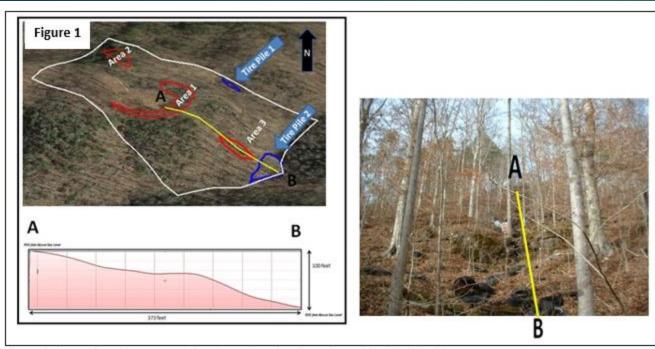
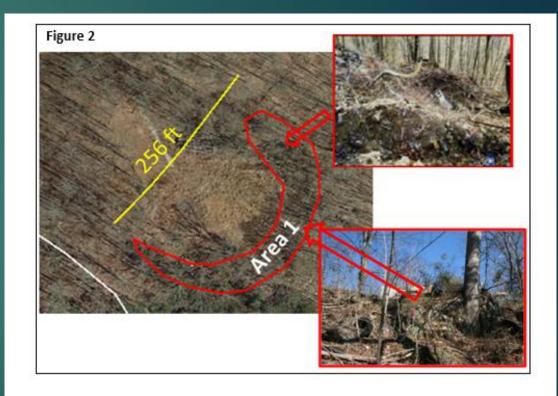
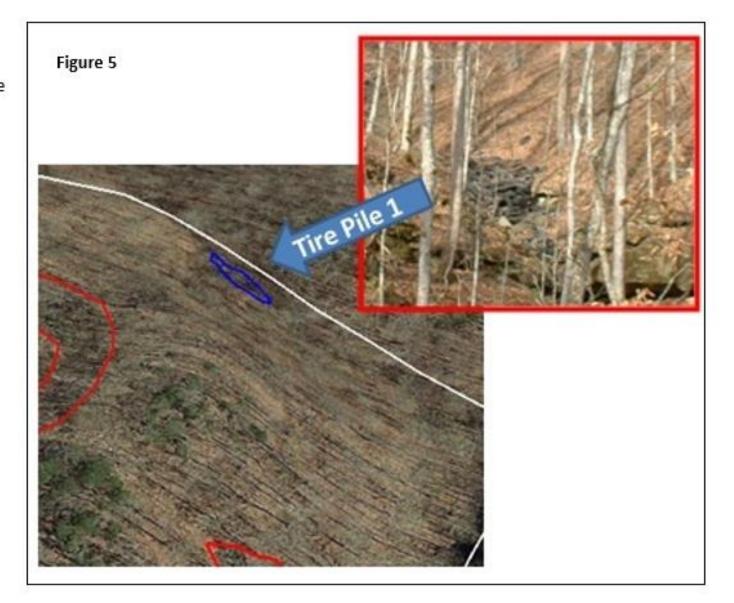


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Tire Pile 1 Approximately
200- 400 tires are
located within a
drainage path
along the east
boundary of the
site (Figure 5.)



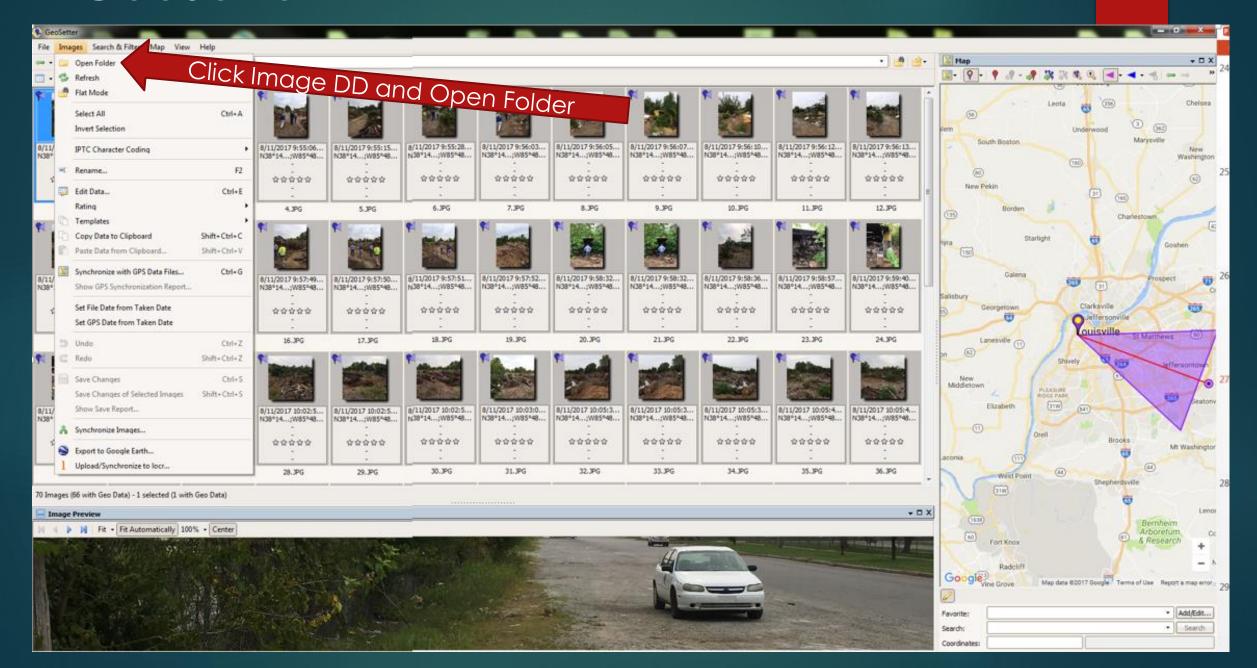
KML and KMZ is a file extensions

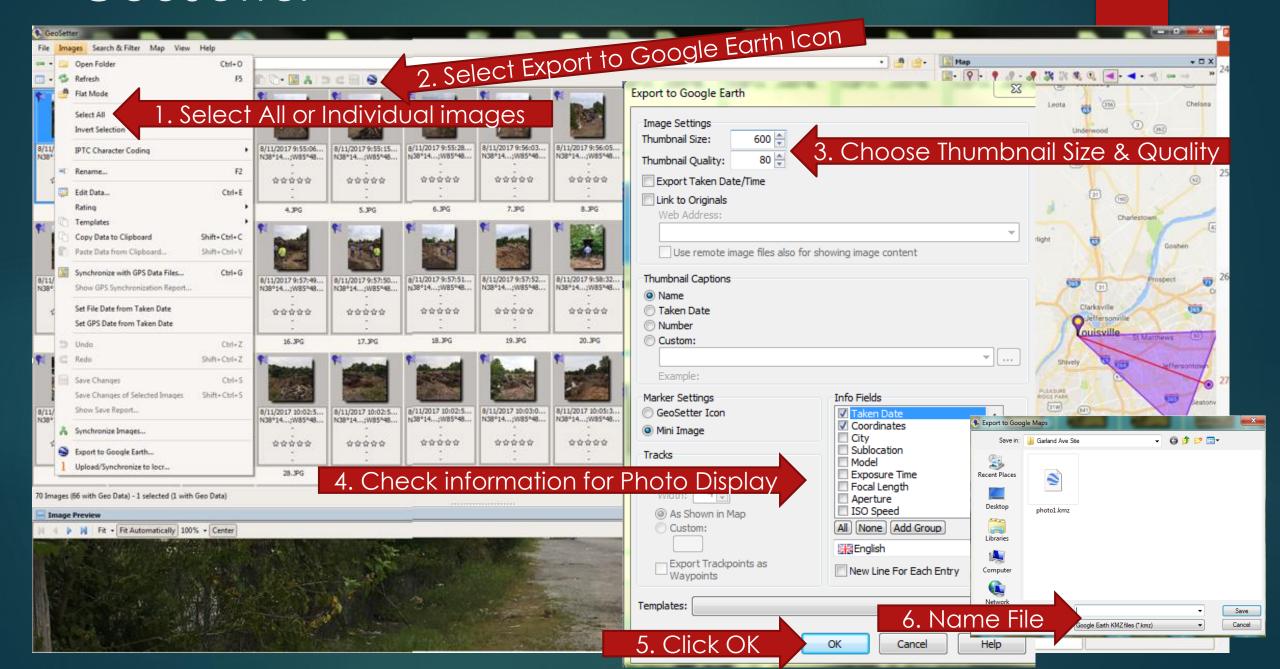
- KML is a file format used to display geographic data in an Earth browser such as Google Earth. KML uses a tag-based structure with nested elements and attributes and is based on the XML standard.
- ▶ KMZ is a file extension for a placemark file used by Google Earth. KMZ stands for Keyhole Markup language Zipped. It is a compressed version of a KML (Keyhole Markup Language) file. Keyhole was the founding company of the Earth Viewer software that Google Earth was built upon.

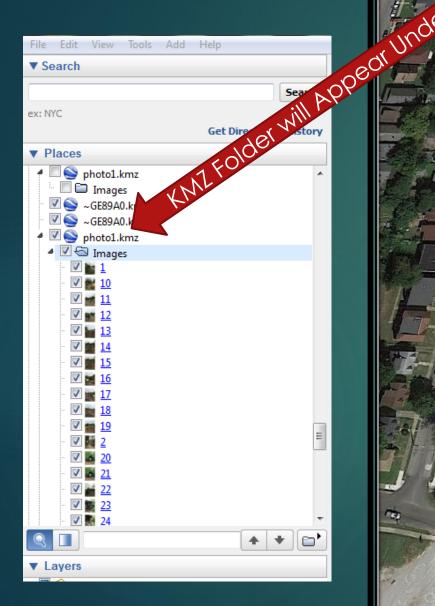


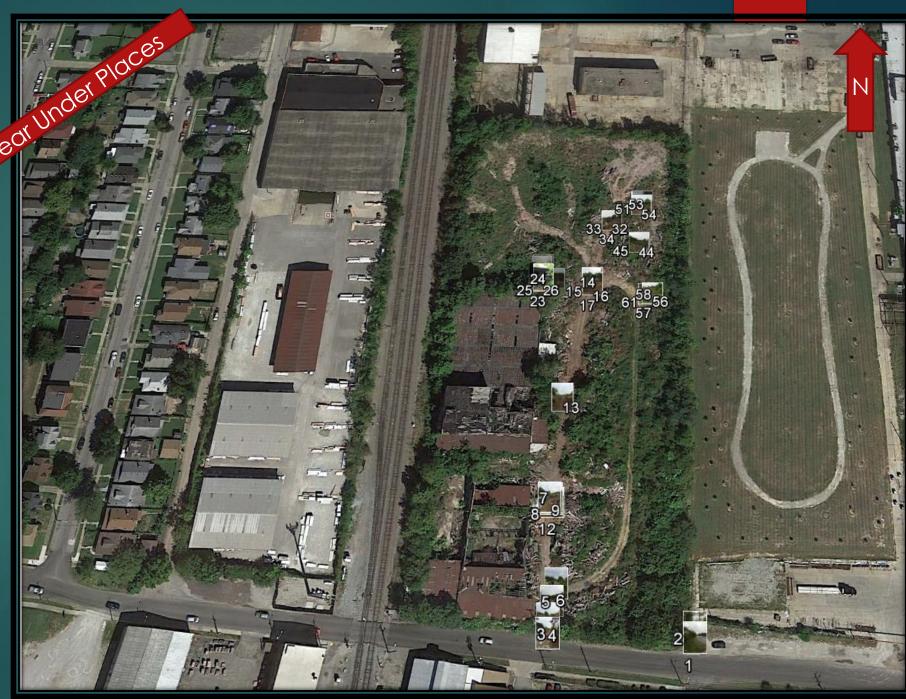
http://www.geosetter.de/en/download/

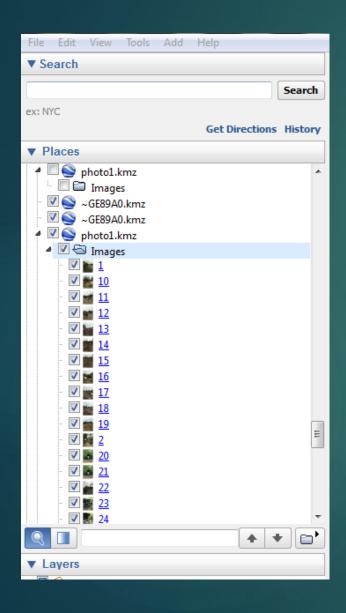
- GeoSetter is a free tool for editing digital image metadata, but with a special emphasis on geographical data. It includes a Google Map feature that shows where the picture was taken. GeoSetter's basic interface is divided into two halves.
- On the left, there are file browser and image preview panes, and on the right is an embedded Google Map. The program also opens with an extensive Settings page, with 10 tabs for configuring File Options, Camera, Startup, ExifTool, and more.

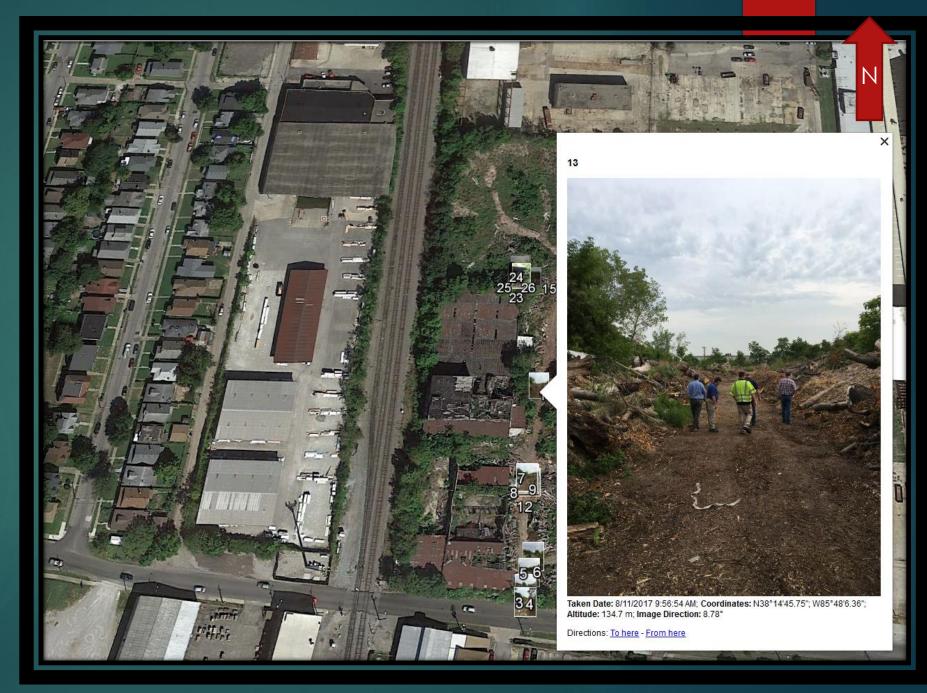












Historical Imagery















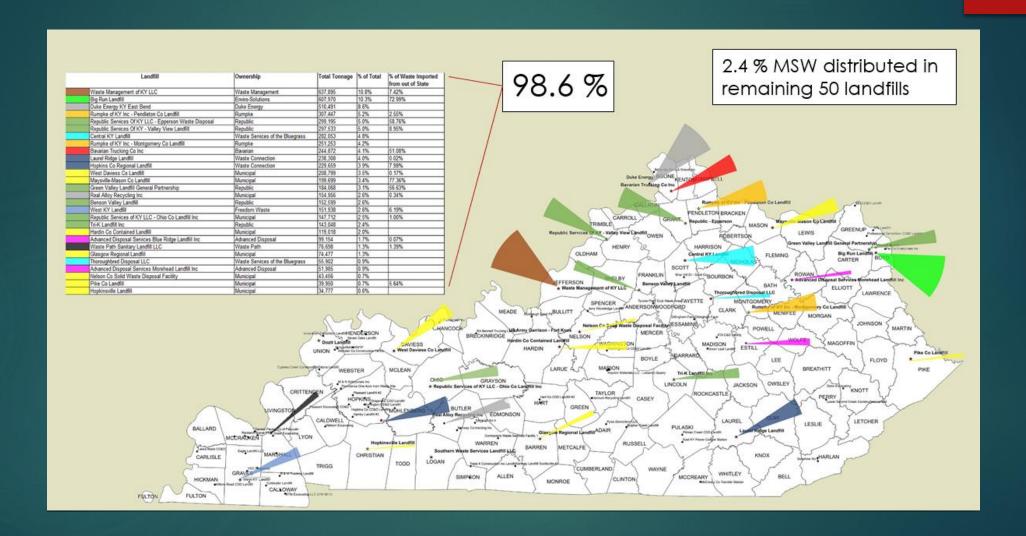




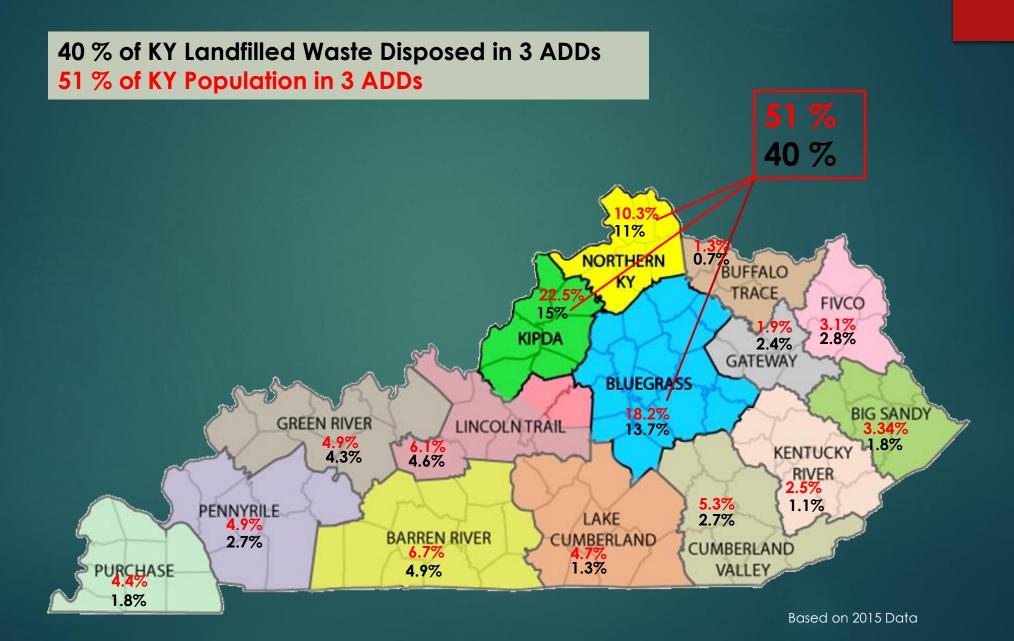




High Volumes of Waste = High Volumes of Available Recyclables

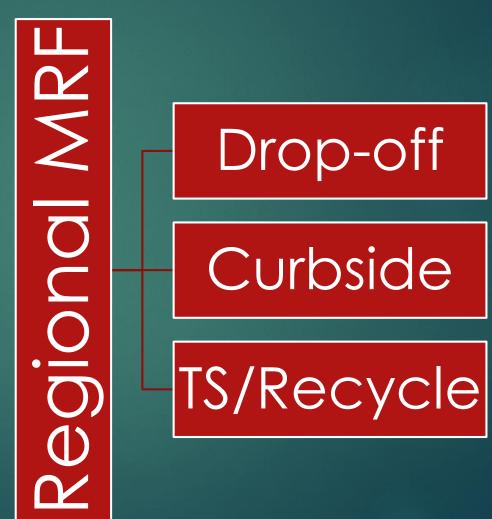


Population and Waste Disposal Distribution

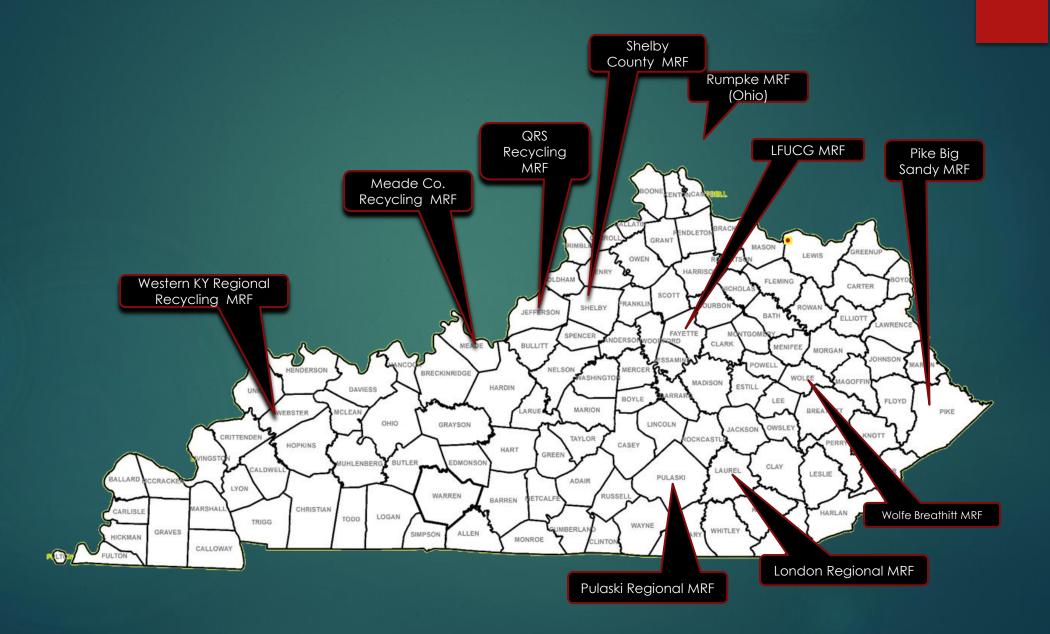


Economies of Scale

When more units of a good or a service can be produced on a larger scale, yet with (on average) fewer input costs, economies of scale (ES) are said to be achieved.



Regional Material Recovery Facilities (MRFs)



Kentucky Illegal Dump Grant Funding and Distribution

		# of			# of			# of
		# of Dump		Grant	# or Dump			# or Dump
County	Grant Funding	Grants	County	Funding	Grants	County	Grant Funding	
Clay	\$3,085,168.23	73	Henderson	\$129,319.56		Knott	\$36,061.86	8
Wolfe	\$2,375,859.50 \$1,824,112.40	123 206	Adair	\$127,734.65 \$121,285.44		Knox	\$35,950.80 \$35,638.19	4
Lee Leslie	\$1,824,112.40	79	Edmonson Christian	\$121,285.44		Larue McLean	\$35,638.19	5
Clinton		23	Pendleton	\$107,050.05		Henry	\$33,943.94	21
Whitley		92	Bullitt	\$95,000.00	1	Johnson	\$31,951.47	8
	\$1,044,319.23	139	Mason	\$92,560.66	25	Letcher	\$28,589.08	6
	\$1,023,492.68	23	Woodford	\$90,180.69	3	Bath	\$26,759.35	21
Owsley	\$920,223.64	113	Muhlenberg	\$87,185.08	18	Fleming	\$25,823.67	9
Warren	\$760,134.72	148	Harrison	\$87,143.97	4	Crittenden	\$25,570.07	23
Laurel	\$622,648.35	58	Campbell	\$84,544.50	1	Grant	\$25,117.95	1
Rockcastle		22	Russell	\$83,087.50	b	Trimble	\$24,335.62	11
Magoffin McCrackon	\$558,727.00 \$515,151.54	60 17	Breckinridge Shelby	\$77,248.74 \$74,476.71	39	Daviess Oldham	\$24,330.07 \$22,267.50	12
McCracken Jackson	\$431,923.04	11	Marshall	\$73,949.46	31	Simpson	\$22,267.50	2
Carter	\$423,305.55	16	Logan	\$72,504.97	29	Webster	\$21,240.03	52
Harlan	\$407,428.88	40	Powell	\$69,949.31	5	Grayson	\$21,027.43	4
Owen	\$404,610.25	15	Hopkins	\$69,713.20	79	Perry	\$21,024.64	2
Breathitt	\$367,904.92	78	Morgan	\$67,187.20	3	Spencer	\$20,494.31	7
Wayne	\$363,454.95	68	Carlisle	\$66,016.64	1	Livingston	\$19,836.00	3
	\$359,276.34	24	Boone	\$65,340.96	13	Monroe	\$19,566.96	5
Metcalfe	\$342,241.94	9	Jessamine	\$64,121.05	3	Mercer	\$15,525.75	1
Meade	\$317,493.40	30	Carroll	\$63,624.75	3	Trigg	\$15,420.45	6
Elliott	\$309,035.18	39	Montgomery	\$62,640.92	b	Ohio	\$12,873.11	15
Ballard Garrard	\$296,306.61 \$267,189.46	14	Lyon Garrard/Lincoln	\$61,143.72 \$55,774.53	0	Lincoln Fayette LFUC	\$11,991.27 G \$11,713,38	4
Pike	\$267,189.46	8	Casey	\$55,774.53	6	Menifee	\$10,650.00	1
Lewis	\$222,273.96	61	Greenup	\$49,167.97	14	Anderson	\$10,354.04	18
Green	\$215,082.46	10	Boyle	\$46,498.69	2	Graves	\$8,409.20	10
		57	Nelson	\$45,019.90	5	Hancock	\$7,406.12	3
	\$198,081.62	11	Washington	\$44,290.78	13	Floyd	\$7,401.30	1
Bell	\$183,902.33	23	Butler	\$43,760.32	11	Caldwell	\$2,504.25	4
Barren	\$183,476.24	11	Bracken	\$40,247.37	9	Rowan	\$2,400.00	1
Hardin		21	Allen	\$40,158.56	5	Todd	\$2,200.00	1
Taylor	\$147,279.79	24	Martin		14	Union	\$1,714.11	8
Kenton	\$133,701.43	7	Clark	\$38,309.80	5	Jefferson	\$201.76	1
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Kentucky Illegal Dump Count and Distribution

Allen 20 Cater 24 Graves 13 Larue 31 Meade 52 Rowan 22 Casey 29 Grayon 5 Laurel 77 Menifee 22 Russell 13 Casey 29 Grayon 5 Laurel 77 Menifee 2 Russell 13 Casey 29 Grayon 5 Laurel 77 Menifee 2 Russell 13 Casey 14 Case 14 Ca	Allen 20 Carter 24 Graves 13 Larue 31 Mende 22 Rowan 22 National Control of the C	A -1 - 1 -	47	CII	0	Ct	4	17	4.4		40	D - 1 41 - C0	
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Commonwealth Of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection
Division of Waste Management
Recycling and Local Assistance
waste.ky.gov/RLA

http://waste.ky.gov/RLA/Documents/I-Phone%20and%20Google%20Use%20for%20Mapping.pdf